

***DACNE PICTA* CROTCH: A RECENTLY INTRODUCED
PEST OF STORED, DRIED SHIITAKE MUSHROOMS
(COLEOPTERA: EROTYLIDAE)**

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Abstract.—A major infestation of the dacnine erotylid beetle *Dacne picta* Crotch was found in dried shiitake mushrooms (*Lentinula edodes* (Berkeley) Pegler) stored in a warehouse in San Francisco, California. The mushrooms were imported from the People's Republic of China, via Hong Kong, in June 1990, six months prior to the discovery of the infestation. The spread of the infestation within the warehouse was documented.

Key Words.—Insecta, Coleoptera, Erotylidae, stored products, introduced pests, mushrooms

In November 1990, investigators from the San Francisco District, U.S. Food and Drug Administration (FDA), inspected a 400-square-foot warehouse located on the ground floor of a large, old, concrete-and-wood building in San Francisco, California. The inspection was conducted to ascertain whether a shipment of 103 cartons of dried shiitake mushrooms (*Lentinula edodes* (Berkeley) Pegler), which had been imported from the People's Republic of China, via Hong Kong, in October 1990, was present. The mushrooms had been refused entry into commerce in the United States and were to be re-exported. The inspection revealed that 40 of the 103 cartons were missing and that 40 cartons of previously imported mushrooms had been substituted for them. This substitution revealed the capacity of dacnine erotylid beetles to produce major infestations in stored dried mushrooms.

The substituted cartons came from two lots of mushrooms imported from Hong Kong in June 1990. One lot, which originally contained 38 cartons, was represented in the warehouse by 19 cartons. The other lot, which originally contained 34 cartons, was represented by 21 cartons. Both living and dead beetles were observed in and on the substituted 19 carton lot and on the warehouse floor (Figs. 1, 2). Neither the other substituted lot nor the remnants of the original lot appeared to harbor beetles. Samples were collected from the substituted lots and were examined by the FDA San Francisco District Microanalytical Laboratory. This examination revealed that the substituted 19 carton lot was infested with the dacnine erotylid beetle *Dacne picta* Crotch, which is known to occur in Japan and mainland Asia (John Lawrence, personal communication). As a result, all 103 cartons in the warehouse were placed under embargo by the California Department of Food and Agriculture (CDFA), which was cooperating in the investigation.

A follow-up inspection was conducted in December 1990, at which time the embargoed material was still in the warehouse. Re-inspection revealed that beetles were still in and on the first substituted lot (Fig. 3) and that the second substituted

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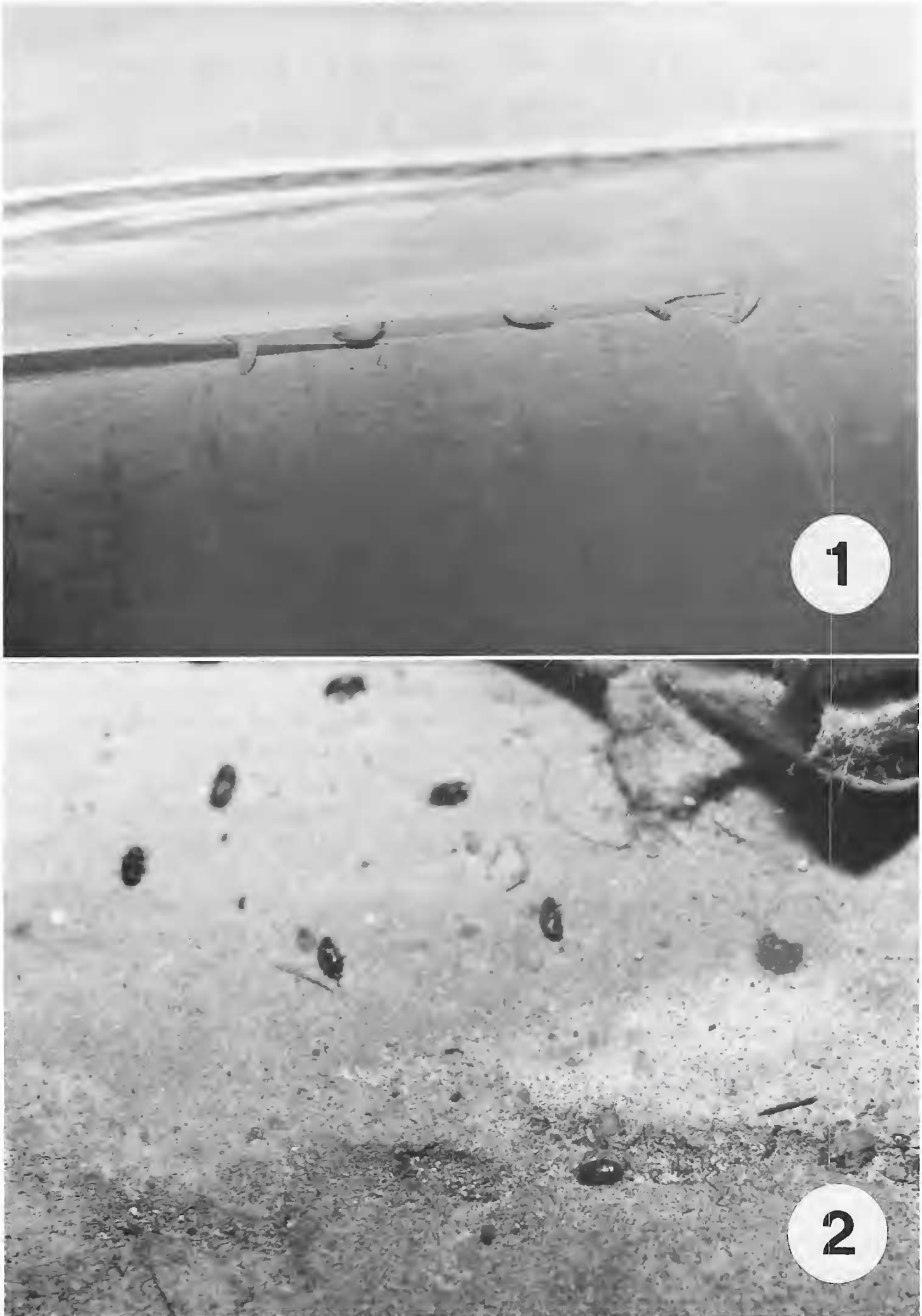


Figure 1. Larvae of *Dacne picta* along seam of carton containing shiitake mushrooms. Carton is form lot imported from the People's Republic of China, via Hong Kong, to the United States in June 1990. Photographed in November 1990.

Figure 2. Adults of *Dacne picta* on floor of warehouse, near cartons containing shiitake mushrooms. Photographed in November 1990.

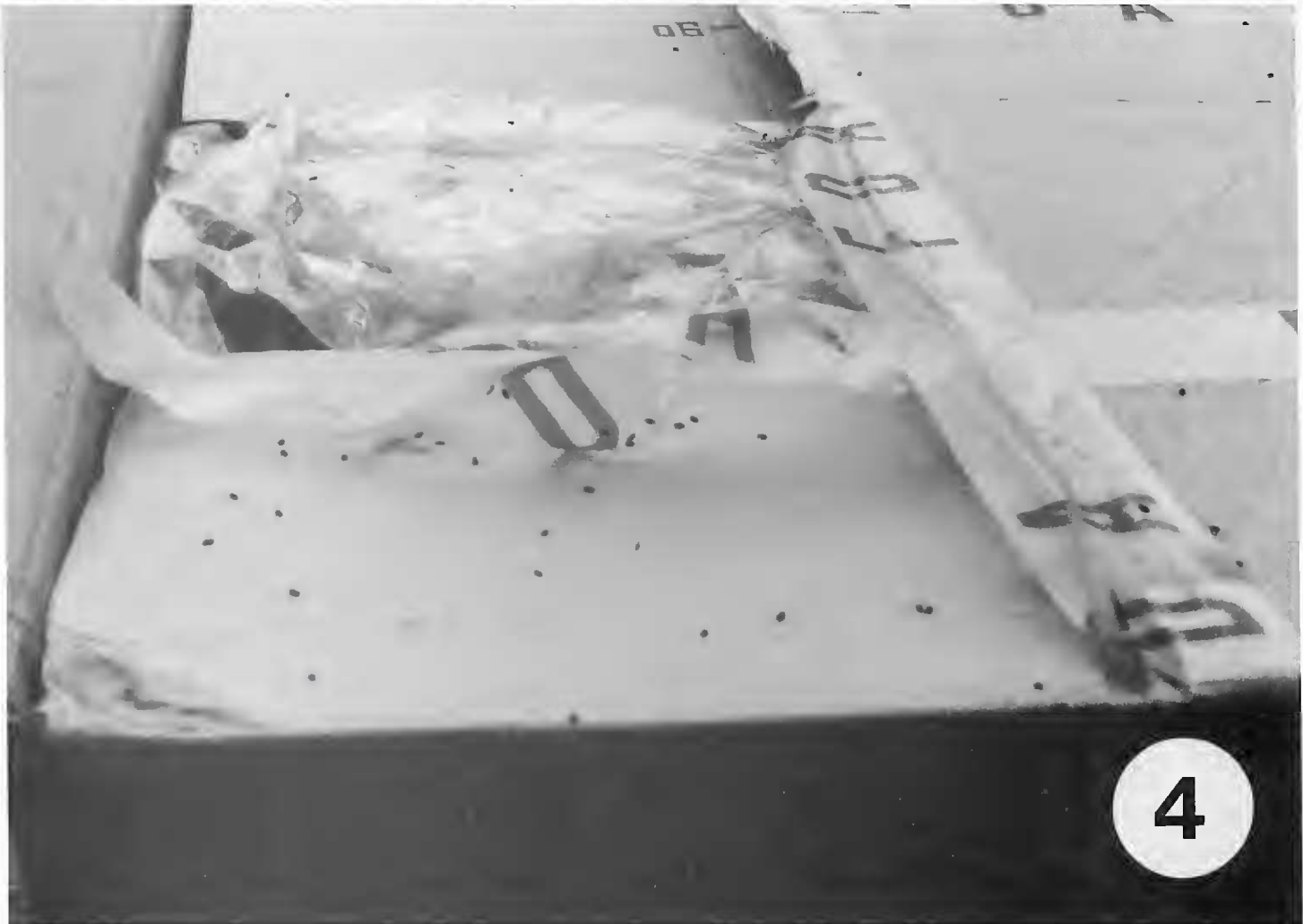


Figure 3. Adults of *Dacne picta* on corner of carton containing shiitake mushrooms. Carton is from same lot as carton shown in Figure 1. Photographed in December 1990.

Figure 4. Adults and larvae of *Dacne picta* on carton containing shiitake mushrooms. Carton is from substituted lot that appeared to be uninfested in November 1990. Photographed in December 1990.

lot had become heavily infested with *D. picta* since the previous inspection (Fig. 4). One beetle was found on a plastic bag in a carton belonging to the original lot, but none were observed in the enclosed mushrooms. At least 400 live beetles were observed on the warehouse floor. Both infested lots were voluntarily destroyed by the warehouse owner during inspections. The destructions were witnessed by representatives of the CDFA. The remaining 63 cartons were re-exported to Hong Kong.

Several aspects of this infestation suggest that *D. picta* is a potentially serious pest of stored dried shiitake mushrooms. *Dacne picta* is able to maintain viable populations in stored mushrooms, as evidenced by the discovery of the infestation six months after the affected mushrooms were imported. Presumably, the beetle arrived in the country along with the mushrooms. The infestation was well-established and active when discovered, with numerous live adults and larvae present. Further, *D. picta* can colonize and infest mushrooms while in storage. During the month following the initial discovery of the infestation, a second lot of mushrooms, previously inspected, sampled and found to be pest-free, became infested. A number of beetles were observed on cartons belonging to a third lot, and one had entered the lot, but none had penetrated the packaging. The presence of many beetles on the cartons and warehouse floor suggests that *D. picta* readily disperses.

Lawrence (1988) reported *D. picta* from stored dried mushrooms imported to Australia from Asia. Dr. Lawrence (personal communication) told me that this report was based on two separate collections of *D. picta* from dried shiitake mushrooms purchased in Canberra. The mushrooms had been imported from the People's Republic of China. The first collection was made on 3 Mar 1981 by R. A. Barret and consisted of about 10 adults and several larvae. The second collection was made on 30 Jul 1981 by R. Farrow and consisted of seven adults.

The FDA Los Angeles District Microanalytical Laboratory has found *D. picta* in dried mushrooms imported to Los Angeles from Korea in four instances. In three of these, the beetles were in shiitake mushrooms (*L. edodes*): a single live adult was collected on 4 Dec 1986 by Michael L. Zimmerman, a single dead adult was collected on 8 Dec 1986 by James J. Madenjian, and 19 dead adults and 2 live adults were collected on 28 Nov 1988 by James J. Madenjian. In one instance (10 Nov 1987), two dead *D. picta* adults were collected from straw mushrooms (*Volvariella volvacea* (Bulliard ex Fries) Singer). Recently, Dr. Paul Johnson of the University of Wisconsin (personal communication) told me of a collection of three *D. picta* adults that were found inside a cellophane bag of dried shiitake mushrooms from Japan. The mushrooms were purchased at an Oriental foods store in Corvallis, Oregon on 2 Feb 1982.

Dacne picta is not the only member of the genus recorded from stored dried mushrooms. Two dead *D. japonica* Crotch adults were collected on 14 Apr 1987 by James J. Madenjian from shiitake mushrooms imported to Los Angeles, California, from the People's Republic of China. The multiple introductions of *Dacne* spp. into the United States and elsewhere, particularly the three known introductions of live *D. picta* into California, and the demonstrated ability of *D. picta* to produce major and persistent infestations in stored dried mushrooms raise questions as to whether these erotyliids will become established pests outside of their natural range.

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LITERATURE CITED

- Lawrence, John F. 1988. Notes on the classification of some Australian Cucujoidea (Coleoptera). J. Aust. Entomol. Soc., 37: 53-54.